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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/574,755

04/05/2006

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576P089

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09/26/2008

EXAMINER

DOLLINGER, MICHAEL M

ART UNIT

PAPER NUMBER

1796

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/574,755	<b>Applicant(s)</b> UMEYAMA ET AL.	
	<b>Examiner</b> MICHAEL DOLLINGER	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/19/2006, 02/05/2007 and 05/18/2007</u> .                   | 6) <input type="checkbox"/> Other: ____.                          |



## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 2 is objected to because of the following informalities: the reference to claim 1 in line 1 has parentheses around the 1, i.e. "claim (1)". The parentheses must be deleted. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchimya - JP 11315249 A in view of Umeyama et al -WO/2002/068495 (references are made to US equivalent US 2004/0077800 A1) and further in view of Fukuchi et al US 5,945,482 and with further evidence provided by SpecialChem (SpecialChem4Polymers. Organo silicasol DMAC-ST: Typical properties.).
4. Uchimya discloses protective films for light filters and liquid crystal display [0001; 0002; 0006] with light transmittance of not less than 90% in wavelength of 400nm at 2µm thickness [0008] comprising an epoxy containing at least two epoxy groups and an acrylic resin [0010-0011], a solvent [0032], a curing agent including a polyhydric phenol [0022], and 10 to 100 parts by weight [0030] of a filler with a particle size of less than

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300nm [0029] which is preferably a humidity-tolerant silica particle [0025]. An example of a silica filler is the colloidal silica NPC-ST available from NISSAN CHEMICAL INDUSTRY Co., Ltd. NPC-ST has an average particle diameter of 10-15nm and no alkali metal content.

5. Uchimya does not disclose a curing agent that is a polyhydric phenol having a cyclic terpene skeleton, an imidazole type curing accelerator, or a colloidal slurry of fine silica particles with a pH of 6 to 8.

6. Uchimya, however, teaches that the light filter resin composition is directed toward heat resistance [0001; 0006] particularly in ITO forming temperature [0003] and the epoxy resin preferably contains a fluorene skeleton [0008; 0014].

7. Umeyama et al disclose a composition for protective film comprising an epoxy resin having at least two epoxy groups per molecule [0006] including epoxy resins with a fluorene skeleton [0026-0027], a curing agent that is a terpene backbone-containing polyvalent phenol curing agent produced by adding two molecules of phenols to one molecule of a cyclic terpene and optionally condensed with an aldehyde and/or ketone [0008], and an imidazole type curing promoter [0006]. Umeyama et al teach that the composition provides a protective film satisfying good adhesiveness, visible light transmittance, high surface smoothness and high heat resistance [0004-0005] particularly for ITO formation [0002; 0056].

8. It would have been obvious to one having ordinary skill at the time the invention was made to have used a polyphenol curing agent having a cyclic terpene skeleton and an imidazole curing accelerator to cure a light filter resin composition of an at least

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difunctional epoxy resin with a colloidal silica because Uchimya teaches that it is within the skill of the art to cure an at least difunctional epoxy resin having a fluorene skeleton and a colloidal silica additive with a polyhydric phenol curing agent and Umeyama et al teach that it is within the skill of the art to cure an at least difunctional epoxy resin having a fluorene skeleton with a polyhydric phenol a terpene backbone-containing polyvalent phenol curing agent produced by adding two molecules of phenols to one molecule of a cyclic terpene and optionally condensed with an aldehyde and/or ketone, and an imidazole type curing promoter. One would have used the curing agent and curing promoter of Umeyama et al in order to receive the expected benefits of good adhesiveness, visible light transmittance, high smoothness and high heat resistance particularly for ITO formation in the composition of Uchimya.

9. Regarding the limitation to the pH of 6 to 8 of the colloidal silica, Uchimya teaches that the silica particle chosen is preferably "humidity-tolerant" to ensure humidity-tolerance to the resin composition [0025]. Examiner received an oral translation from Akiko Smith, a translator at the USPTO, which indicated that "humidity tolerant" is more accurately translated as "humidity resistant".

10. Fukuchi et al disclose colloidal silica as a water repellent (humidity resistant) additive to polymer films [column 8 lines 1-4]. Fukuchi et al disclose examples of the silica as, *inter alia*, NPC-ST and DMAC-ST available from NISSAN CHEMICAL INDUSTRY Co., Ltd. [column 8 lines 5-8]. Fukuchi et al, henceforth, teach that NPC-ST and DMAC-ST are functional equivalents for the purpose of establishing water repellence. Therefore one skilled in the art would have found it obvious to replace the

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NPC-ST of Uchimya with DMAC-ST since they are recognized equivalents in the art by Fukuchi. It is obvious to substitute one functional equivalent for another when the equivalence is recognized in the prior art for the same purpose. See MPEP § 2144.06.

11. SpecialChem provides evidence that DMAC-ST colloidal silica has a pH range from 4 to 6 which overlaps the claimed range of 6 to 8. When the disclosed and prior art ranges are overlapping, a *prima facie* case of obviousness exists. See MPEP § 2144.05 for obviousness of ranges.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL DOLLINGER whose telephone number is (571)270-5464. The examiner can normally be reached on Monday - Thursday 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MICHAEL DOLLINGER  
Examiner  
Art Unit 1796

/mmd/

/Randy Gulakowski/  
Supervisory Patent Examiner, Art Unit 1796